APPENDIX D

TRANSPORTATION ANALYSIS

PREPARED BY
HEXAGON TRANSPORTATION CONSULTANTS

Daily Project Trip Generation

Scenario	Use	Size		Trip Rate[b]	Daily Trips Total	In	Out
[A] Proposed Uses	Condo/Townhome	251	units	5.86	1,471	736	736
	Hotel	263	units	8.92	2,346	1,173	1,173
	Shopping Center	3	k.s.f.	42.94	129	64	64
Subtotal					*3,946*	*1,973*	*1,973*
[B] Existing Use	Hotel	378	units	8.92	3,372	1,686	1,686
[C] Internal Trip Deduction[c]					-64	-32	-32
Net Trip Generation: [A] - [B] + [C]					**509**	**255**	**255**

Note: Numbers may not add due to rounding.

[b] All Rates based on ITE Trip Generation, "Average" rate

[c] Internal deduction of 50% applied to Shopping center use only

HEXAGON TRANSPORTATION CONSULTANTS, INC.

Memorandum

Date: March 16, 2005

To: John Schwarz, David J. Powers and Associates, Inc.
Kristy Le, David J. Powers and Associates, Inc.

From: Brett Walinski BW
Matt Nelson

Subject: Traffic Study for the Proposed Lakeside Sheraton Project

Hexagon Transportation Consultants, Inc. has completed this traffic study for the Lakeside Sheraton project located in Sunnyvale, California. The site is located at 1250 Lakeside Drive (see Figure 1 for site location and Figure 2 for project site plan). The project as proposed would replace a 378-room hotel with 251 condominium units and a 263-room hotel with restaurant and retail. The hotel is surrounded by both residential and commercial uses. Current access to the hotel is provided via three driveways on Lakeside Drive.

Scope of Study

This study was conducted for the purpose of identifying the potential traffic impacts related to the proposed development. The potential impacts of the project were evaluated in accordance with the standards set forth by the City of Sunnyvale. The traffic analysis was based on peak-hour levels of service for one signalized intersection - Lawrence Expressway and Oakmead Parkway. A County Congestion Management Program (CMP) analysis was not required because the project would generate fewer than 100 peak hour trips.

Traffic conditions at the signalized intersection were analyzed for the weekday AM and PM peak hours of traffic. The AM peak hour of traffic is generally between 7:00 and 9:00 AM, and the PM peak hour is typically between 4:00 and 6:00 PM. It is during these periods that the most congested traffic conditions occur on an average day. The operations of the study intersection was evaluated for the following conditions:

Condition 1: *Existing Conditions.* Existing conditions were represented by existing peak-hour traffic volumes on the existing roadway network. Existing traffic volumes were obtained from new traffic counts.

Condition 2: *Background Conditions.* Background conditions were represented by future background traffic volumes on the near-term roadway network. Background traffic volumes were estimated by adding to existing peak-hour volumes the projected volumes from approved but not yet completed developments. The latter component was estimated based on data from the City of Sunnyvale.

Condition 3: *Project Conditions.* Project conditions were estimated by adding to background traffic volumes the additional traffic generated by the project. Project conditions were

evaluated relative to background conditions in order to determine potential project impacts.

Condition 4: *Future Growth Conditions.* Future growth conditions represent forecasted traffic conditions for the year 2010, with the proposed project. The intersection lane configurations under future growth conditions were assumed to be the same as described under background conditions. Future growth traffic volumes include existing traffic volumes, approved project traffic, project traffic, and regional traffic growth of 1.8 percent per year. The results of the future growth analysis are presented for informational purposes to provide a tool for identifying the locations where future roadway improvements may be necessary.

The study intersection was evaluated for each scenario using level of service (LOS). Level of service is a qualitative measure of traffic operations, ranging from LOS A (free-flow conditions) to LOS F (congested conditions). The levels of service at the signalized intersection was evaluated using TRAFFIX software with CMP defaults. This method uses the *2000 Highway Capacity Manual* methodology to estimate the average delay per vehicle in seconds. This average delay can then be correlated to a level of service as shown in Table 1.

Table 1
Signalized Intersection Level of Service Definitions Based on Delay

Level of Service	Description	Average Control Delay Per Vehicle (seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	10.0 or less
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.1 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths.	Greater than 80.0

Source: Transportation Research Board, *Highway Capacity Manual 2000,* Exhibit 16-2.

New traffic counts were conducted at the intersection of Lawrence Expressway and Oakmead Parkway for both AM and PM peak hours. These counts are shown in the attached appendix.

Existing Transportation Setting

Regional vehicle access to the project is provided via *US 101* and *Lawrence Expressway*. Direct access to the project site is provided via *Lakeside Drive*. These facilities are described below.

US 101 is a north/south freeway that extends from north of San Francisco to south of San Jose. In the project vicinity, US 101 is oriented east/west, has six mixed-flow lanes, and two High Occupancy Vehicle (HOV) lanes. US 101 provides access to the project site via an interchange at Lawrence Expressway.

Lawrence Expressway is a north/south roadway providing regional access from SR 237 in the north to Saratoga Avenue in the south. It serves a variety of commercial, industrial, and residential uses. At its terminus to the south, Lawrence Expressway becomes Quito Road. At its terminus to the north, Lawrence Expressway becomes Caribbean Drive. Near the project site, Lawrence Expressway has six mixed flow lanes and two HOV lanes.

Lakeside Drive is a two-lane collector street with a two-way center left-turn lane. It provides direct access to project the site. Lakeside Drive begins at Arques Avenue in the west and ends at Scott Boulevard in the east. Lakeside Drive intersects with Oakmead Parkway south of the project site.

Pedestrian, Bicycle Facilities, and Transit Services

The closest bike lanes in the vicinity of the project site are found on Lakeside Drive. Bicycles are also permitted to use Lawrence Expressway.

Pedestrian facilities in the project area consist primarily of sidewalks and crosswalks along the streets in the surrounding residential neighborhood and in nearby commercial areas. Sidewalks and crosswalks are found along virtually all nearby roadways.

Existing transit service on the surrounding roadway network is provided by the Santa Clara Valley Transportation Authority (VTA). Bus route 55 would provide the closest transit service. It provides service along Lawrence Expressway and East Duane Avenue with 20-minute headways during commute hours.

Existing Intersection Operations

Traffic operations at the study intersection were evaluated using TRAFFIX software to determine level of service for the AM and PM peak hours. The TRAFFIX calculation sheets are included in the attached appendix. Based on the analysis, the intersection of Lawrence Expressway/Oakmead Parkway operates at LOS D during both the AM and PM peak hours.

Traffic conditions in the field were observed in order to identify existing operational deficiencies and to confirm the accuracy of calculated levels of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to intersection level of service, and (2) to

identify any locations where the level of service calculation does not accurately reflect level of service in the field. The field observations revealed that the level of service analysis accurately reflects actual existing traffic conditions. However, it should be noted that:

- Vehicle queues on East Duane Avenue, immediately west of Lawrence Expressway, occasionally spilled back through the East Duane Avenue/Stewart Drive intersection during the PM peak hour. Therefore, some of the vehicles making the eastbound left-turn were unable to get through the traffic signal at Lawrence Expressway because of the backups on East Duane Avenue during the PM peak hour.

- The posted speed limit on Lakeside Drive along the frontage of the project is 35 mph. During field observations the estimated vehicle speeds tended to be 40 to 45 mph.

Background Conditions

The background conditions are future traffic conditions just prior to project completion. Background conditions are represented by background traffic volumes on the background street system. Background traffic volumes consist of existing traffic volumes plus traffic from approved but not yet constructed or occupied developments. There are two approved developments that would generate additional trips in the study area:

Lowe's Home Improvement: 141,000 sf. of retail space located at 815 Stewart Drive.

Kifer Industrial: 26,000 additional sf. of industrial space located at 1290 Kifer Road.

There are no planned improvements to the study intersection. Therefore, the background roadway network was assumed to be the same as the existing roadway network.

The results of the level of service calculations show that the study intersection would continue to operate at LOS D under background conditions during the AM and PM peak hours. The level of service calculation sheets are included in the Appendix.

Project Trip Generation and Assignment

The magnitude of traffic added to the roadway system by the project was estimated by multiplying the applicable trip generation rates by the size of the development. The trip generation rates used for the proposed project are based on those published in the Institute of Transportation Engineers (ITE) manual entitled *Trip Generation*, Seventh Edition. According to ITE's description of a "Hotel" land use, the ITE rates for hotels commonly include restaurants. Based on these rates, the proposed project would generate 289 trips during the AM peak hour and 326 trips during the PM peak hour. Trip credits were applied to account for (1) the 378 unit hotel located on the project site and (2) the internalization of project trips between the shopping center, hotel, and residential uses. After subtracting these credits, the proposed project would generate 35 new AM peak hour trips and 56 new PM peak hour trips. Using the inbound/outbound splits recommended by ITE, the project would produce:

- 25 fewer inbound and 60 additional outbound trips during the AM peak hour, and
- 51 additional inbound and 5 additional outbound trips during the PM peak hour.

The project trip generation estimates are presented in Table 2.

Table 2
Project Trip Generation

Scenario	Use	Size		AM Peak Hour Trip Rate[b]	AM Peak Hour Trips Total	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour Trip Rate[a]	PM Peak Hour Trips Total	PM Peak Hour In	PM Peak Hour Out
[A] Proposed Uses	Condo/Townhome	251	units	0.44	110	19	91	0.52	131	88	43
	Hotel	263	units	0.67	176	102	74	0.70	184	90	94
	Shopping Center	3	k.s.f.	1.03	3	2	1	3.75	11	5	6
Subtotal					*289*	*123*	*166*		*326*	*183*	*143*
[B] Existing Use	Hotel	378	units	0.67	253	147	106	0.70	265	130	135
[C] Internal Trip Deduction[c]					-2	-1	-1		-6	-3	-3
Net Trip Generation: [A] - [B] + [C]					**35**	**-25**	**60**		**56**	**51**	**5**

Note: Numbers may not add due to rounding.
[a] All Rates based on ITE Trip Generation, "Average" rate, during the weekday 4:00 PM to 6:00 PM period
[b] All Rates based on ITE Trip Generation, "Average" rate, during the weekday 7:00 AM to 9:00 AM period
[c] Internal deduction of 50% applied to Shopping center use only

The trip distribution pattern for the proposed project was estimated based on existing travel patterns in the area, the locations of complementary land uses, and previous traffic studies. The project trip distribution and assignment for the net project trips are shown graphically on Figure 3. The project condition traffic volumes at the site driveways are shown in Figure 4.

Project Traffic Impacts

Project conditions are defined as background traffic volumes plus the addition of project traffic. The levels of service for project conditions are shown in Table 3. The level of service calculation sheets are shown in the attached appendix.

During the AM and PM peak hours, the intersection of Lawrence Expressway and Oakmead Parkway would operate at LOS D under project conditions. According to the City of Sunnyvale, the level of service standard at Lawrence Expressway/Oakmead Parkway intersection is LOS E. The LOS standard on non-CMP facilities in Sunnyvale is LOS D. Therefore, the study intersection would continue to operate at an acceptable LOS during the AM and PM peak hours under project conditions.

Future Growth Intersection Analysis

Traffic volumes under future growth conditions were estimated by applying an annual growth rate of 1.8 percent to the existing volumes, then adding the trips from approved developments and the project trips. The growth rate factor was applied from year 2005 through year 2010. The future growth factor was calculated by comparing 2025 baseline traffic volumes to existing counts. The 2025 volumes were taken

from the CCS Planning and Engineering *Comprehensive Expressway Planning Study*. The level of service results are summarized in Table 3.

Under future growth conditions, the intersection of Lawrence Expressway/Oakmead Parkway is projected to operate at LOS D during AM and PM peak hours. The level of service calculation sheets are included in Appendix.

Table 3
Intersection Levels of Service Summary

		Existing		Background		Project				Future Growth	
Intersection	Peak Hour	Ave. Delay	LOS	Ave. Delay	LOS	Ave. Delay	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Ave. Delay	LOS
Lawrence Expwy	AM	37.7	D	37.7	D	38.0	D	0.0	0.000	39.7	D
& Oakmead Pkwy	PM	43.3	D	43.3	D	43.6	D	0.0	0.000	45.0	D

Impacts to Other Transportation Modes

The proposed project would not result in the alteration of any existing bike, pedestrian, or transit facilities. Although the proposed project would increase the demand for these facilities in the vicinity of the site, the addition of the project trips, by themselves, would not create a demand for these facilities in excess of what is currently provided.

Site Access, Parking and On-Site Circulation

The review of onsite circulation and access was evaluated based on a project site plan dated February 9, 2005 by Brian Kangas Foulk.

Driveway Design

Access to the project site is proposed via three, two lane, full-access (all movements permitted) driveways on Lakeside Drive. The driveways would extend to private roadways throughout the project site, serving the proposed hotel, restaurant, and residential uses. The site plan proposes relocating the easternmost and westernmost driveways. The middle driveway would remain in its existing location. The driveway at the eastern end of the project site is shown to be 26 feet wide. The middle driveway on the project site is shown to be 28 feet wide, and approximately 640 feet west of the easternmost driveway. The westernmost driveway is shown to be 30 feet wide and approximately 285 feet west of the middle driveway. ITE recommends 30-foot wide driveways and 15-foot curb radii for commercial sites. Wider driveways and improved curb radii allow for easier access for trucks, emergency vehicles, and passenger vehicles. Additionally, the existing residential driveways on the north side of Lakeside Drive, across from the proposed project, are not shown on the current site plan. To insure that there are no conflicts with the existing driveway alignments at adjacent properties (i.e. to make sure the left-turn queues and vehicle paths do not conflict), the existing driveway locations should be overlayed on the proposed site plan.

At all three driveways, Lakeside Drive is a two-lane roadway with a two-way center left-turn lane. To determine the worst-case operating delays at the project driveways, the LOS was calculated for the highest volume project driveway (the westernmost driveway). This intersection would operate at LOS B during both AM and PM peak hours. Due to the relatively low traffic volumes on Lakeside Drive, there would be ample gaps to accommodate left turns in and out of the site.

Landscaping is not shown on the current plan. It is recommended that clear sight distance triangles be provided for outbound traffic at the proposed driveways. Although Hexagon observed higher than posted vehicle travel speeds on Lakeside Drive, a review of the existing accident data revealed no unusual accident problems along the project frontage.

Onsite Circulation

An onsite circulation review was conducted in accordance with generally accepted traffic engineering standards. The project would provide 90-degree parking in both surface lots and the two proposed parking structures. For emergency vehicle access, a grasscrete drive aisle would be provided nearly the entire length of the southern end of the site. The site plan shows three dead-end parking aisles. Dead end aisles are undesirable because drivers can enter the aisle, and upon discovering that there is no available parking, must back out or conduct three-point turns. In areas where parking spaces are designated for specific individuals, dead end aisles are less problematic. The onsite internal drive aisle widths on the site plan are shown to be a minimum of 24 feet wide.

Vehicle turning templates were used to determine whether different vehicle types would be able to traverse the site without unreasonable back ups or three-point turns. The analysis showed that all the vehicles would be able to adequately enter the site. However, large semitrailer (WB 50), small semitrailer (WB 40), buses (B 40), and single unit trucks (SU 30) would use all or a portion of the outbound driveway lane while completing their turn into the site. Once onsite, the above vehicles would not be able to traverse the roundabouts within the project site. For trucks, this would result in significant back-up distances to turn around or exit the site.

Adequate throat storage must be provided at all project driveways to (1) allow exiting vehicles to not block parking stalls and (2) prevent entering vehicles from making sudden stops (due to vehicles backing out or entering stalls) and spilling back into the public street. The proposed project would provide between 30 feet and 55 feet at the project entrances. Given the relatively low project condition traffic volumes onsite, the proposed storage is adequate.

Parking

Parking is not shown on the current plan. The project applicant should demonstrate that the proposed plan would (1) comply with the City of Sunnyvale parking standards or (2) complete a shared parking analysis showing an adequate supply of parking spaces.

Conclusions

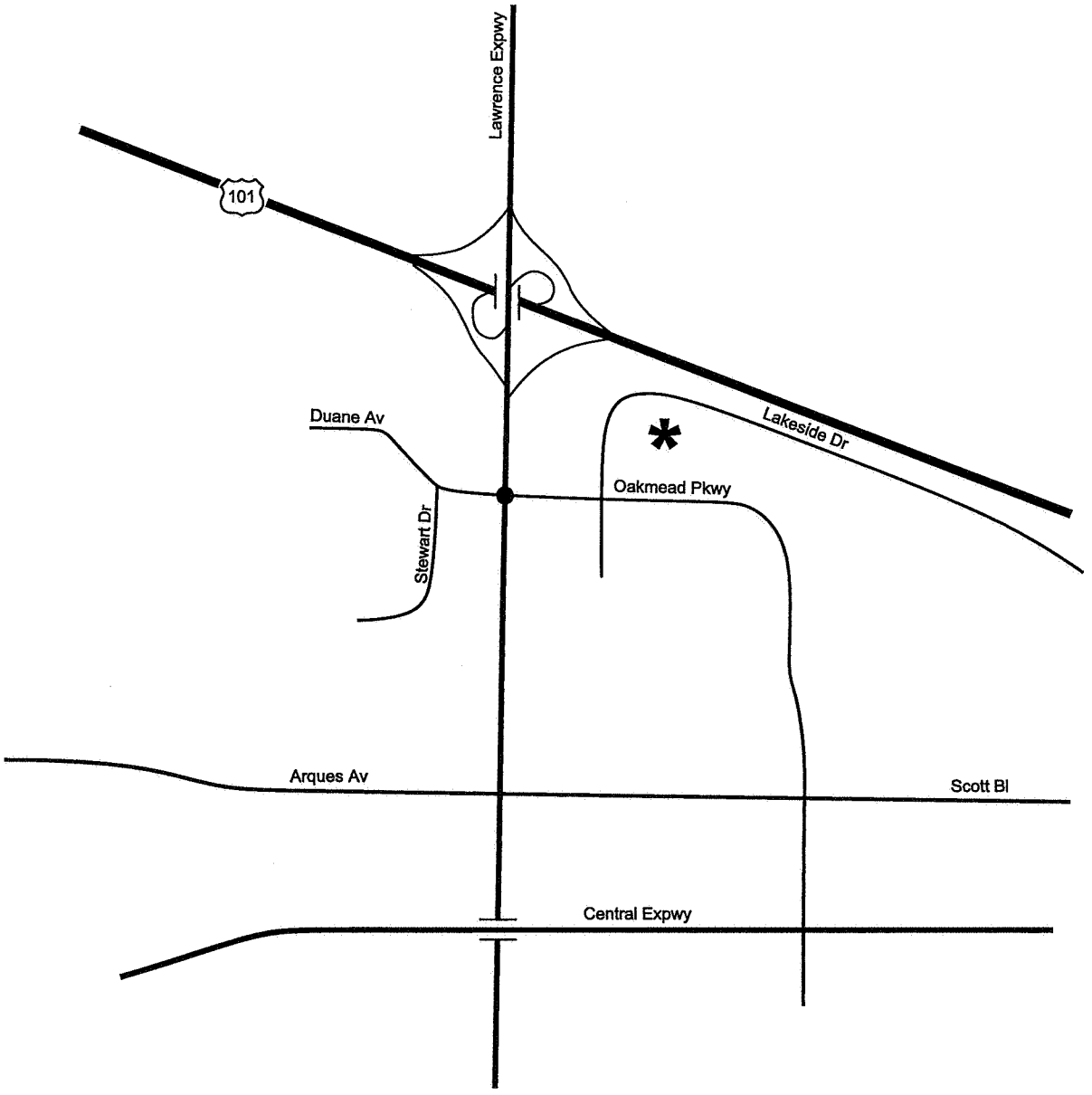
The results of the traffic impact analysis showed that the proposed project would add 35 AM peak hour trips and 56 PM peak hour trips to the roadway network. The project would not result in any LOS impacts to the study locations. The following site circulation and access issues were identified:

1. Two of the project driveways are narrower than recommended by ITE. Thirty foot wide driveways and 15 curb radii are preferred because they would (1) provide better access for trucks and (2) allow more efficient passenger vehicle traffic to access to and from the project site (with minimal impact to the adjacent street traffic).
2. The existing residential driveways on the north side of Lakeside Drive, across from the proposed project, are not shown on the current site plan. To insure that there are no conflicts with the existing driveway alignments at nearby uses, the existing driveway locations should be overlayed on the proposed site plan. The opposing driveways on Lakeside should either (1) line up directly at the centerlines or (2) be offset more than 150 feet (measured centerline to centerline). The driveways at adjacent properties (on the south side of Lakeside) should located at least 150 feet (measured centerline to centerline) from the proposed driveway locations.
3. Trucks would be unable to traverse the proposed roundabouts. The project proponent should either (1) demonstrate that trucks would not need to travel through the proposed roundabouts, or (2) design the roundabouts to accommodate trucks.
4. The site would contain dead-end aisles. The project proponent should (1) provide a turn around area for dead-end aisles, or (2) eliminate the dead-end aisles, or (3) designate the dead-end aisle spaces to specific units or rooms.
5. Landscaping is not shown on the current plan. It is recommended that clear sight distance triangles be provided for outbound traffic at the proposed driveways

This concludes our analysis. If you have any questions, please do not hesitate to call.

Attachments: Figure 1 - 4

Not to Scale



LEGEND

✱ = Site Location

● = Study Intersection

Figure 1

PROJECT SITE LOCATON

Lakeside Sheraton

Hexagon
Transportation Consultants, Inc.

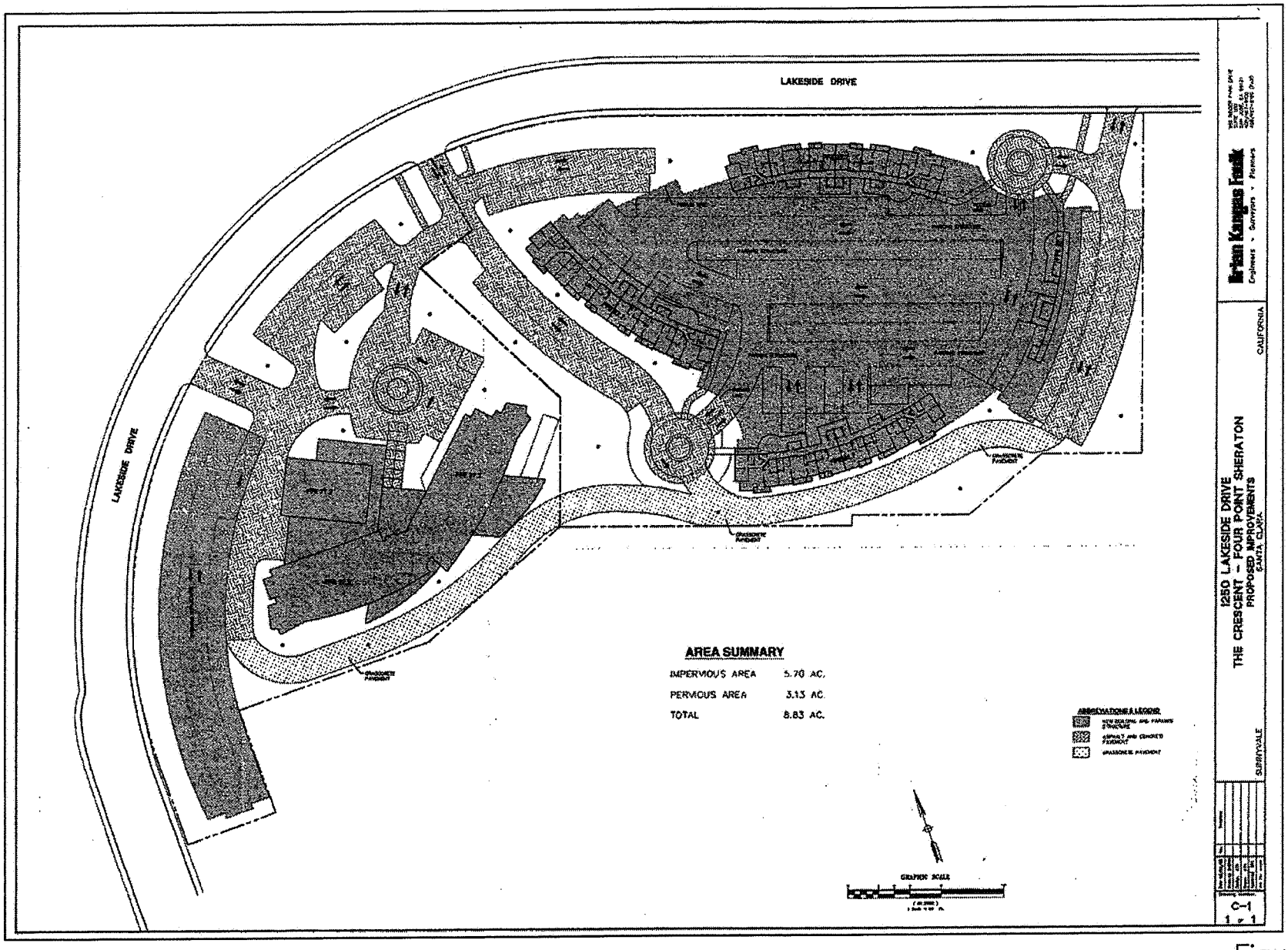
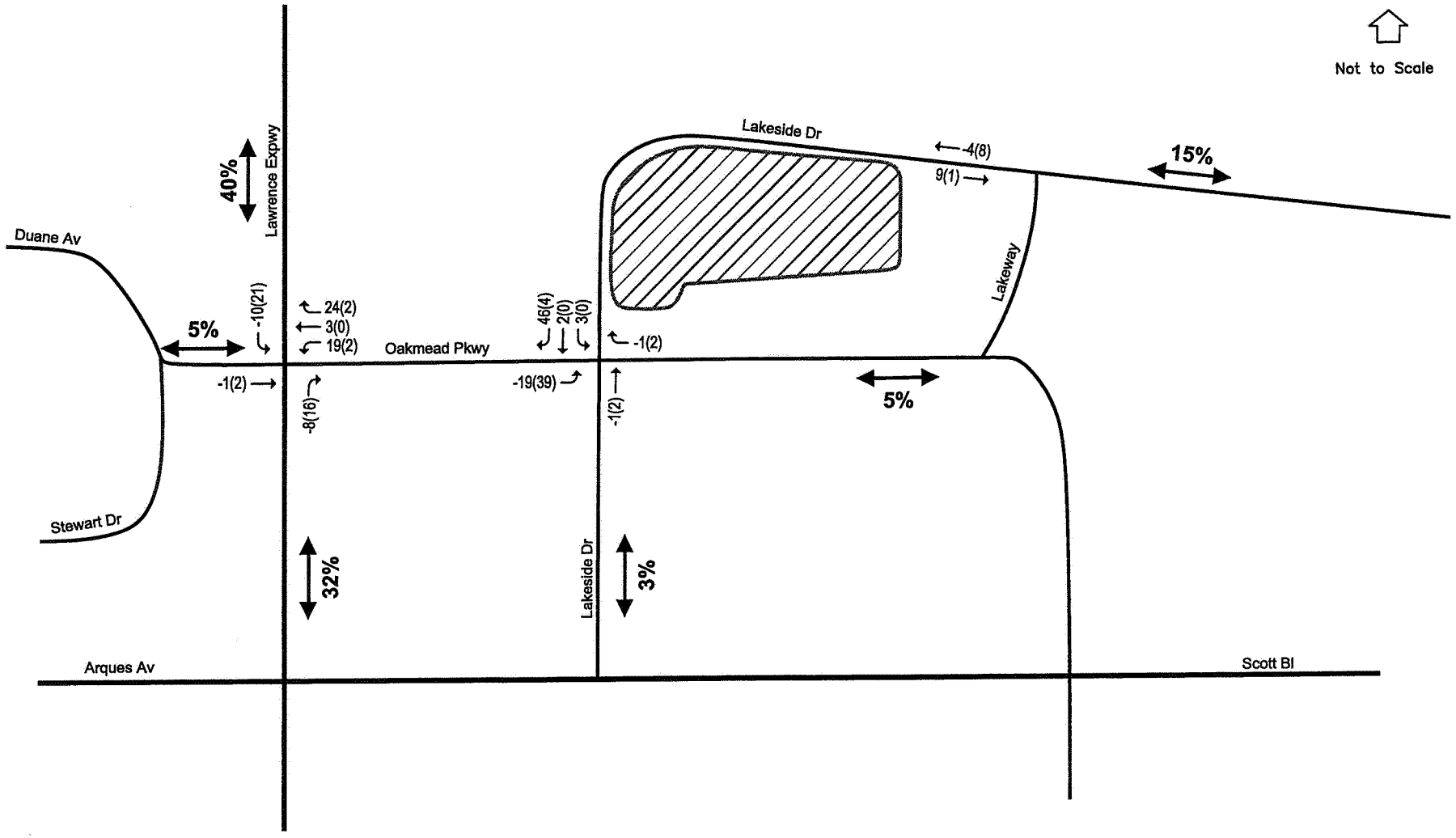


Figure 2

PROJECT SITE PLAN

Lakeside Sheraton

Hexagon
Transportation Consultants, Inc.



LEGEND

= Site Location

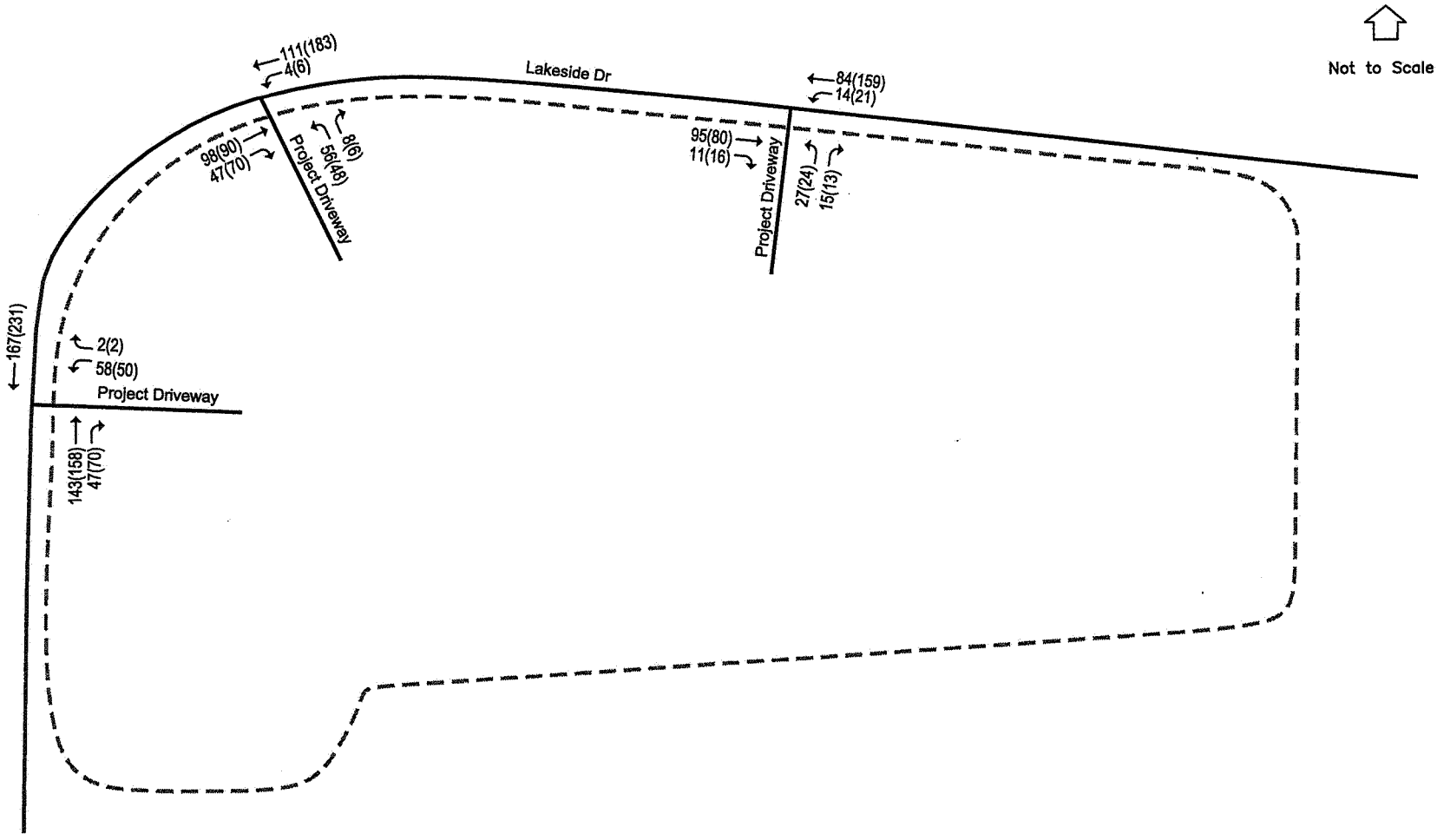
XX(XX) = AM(PM) Volumes

Figure 3

PROJECT TRIP DISTRIBUTION + NET PROJECT TRIP ASSIGNMENT

Hexagon
Transportation Consultants, Inc.

Lakeside Sheraton



LEGEND

= Site Location

XX(XX) = AM(PM) Volumes

Figure 4

PROJECT CONDITION DRIVEWAY VOLUMES

Lakeside Sheraton

Hexagon
Transportation Consultants, Inc.

Appendix

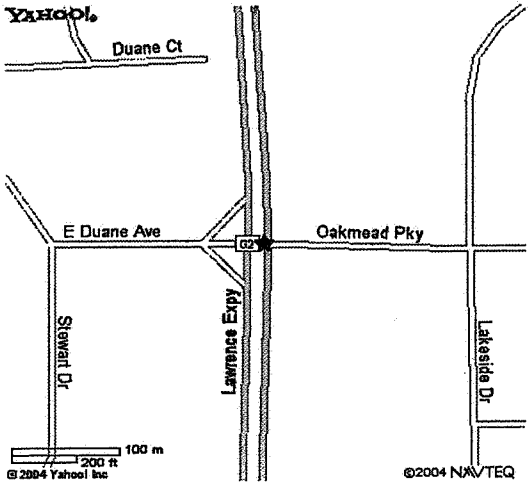
40 South Market Street, Suite 600 • San Jose, California 95113
phone 408.971.6100 • fax 408.971.6102 • www.hextrans.com

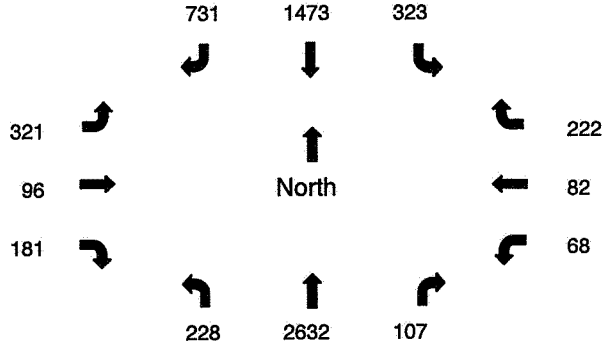
AM Peak-Hour Volume Count Worksheet

Date: 3/1/2005
Counter: Kevin Binder and Patty Iwanciow
Intersection Name: Lawrence/Oakmead/Duane
Weather: Clear

	Lawrence Expwy North Approach			Oakmead East Approach			Lawrence Expwy South Approach			Duane West Approach		
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
7:00	0	0	0	0	0	0	0	0	0	0	0	0
7:15	78	222	41	29	8	7	13	416	15	5	11	23
7:30	171	501	83	83	16	27	23	863	38	20	29	79
7:45	326	863	165	146	40	47	49	1465	90	51	49	131
8:00	488	1179	236	202	56	57	76	2170	158	110	79	211
8:15	719	1604	332	264	80	65	93	2723	216	149	111	299
8:30	861	1908	402	311	96	79	128	3405	265	188	126	353
8:45	1057	2336	488	368	122	115	156	4097	318	232	145	452
9:00	1212	2686	559	415	144	136	176	4636	362	279	164	521

Peak Hour													Hourly Totals
7:00 - 8:00	488	1179	236	202	56	57	76	2170	158	110	79	211	5022
7:15 - 8:15	641	1382	291	235	72	58	80	2307	201	144	100	276	5787
7:30 - 8:30	690	1407	319	228	80	52	105	2542	227	168	97	274	6189
7:45 - 8:45	731	1473	323	222	82	68	107	2632	228	181	96	321	6464
8:00 - 9:00	724	1507	323	213	88	79	100	2466	204	169	85	310	6268
Peak Volumes:	**731**	**1473**	**323**	**222**	**82**	**68**	**107**	**2632**	**228**	**181**	**96**	**321**	**6464**





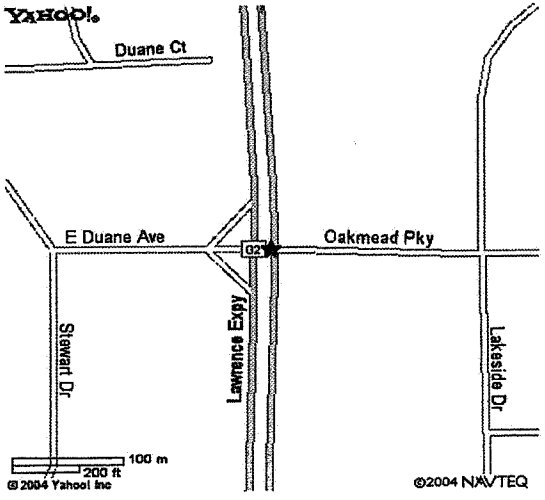
	Peds	Bikes
7:00	0	0
7:15	0	0
7:30	3	4
7:45	7	5
8:00	8	5
8:15	9	8
8:30	12	10
8:45	18	15
9:00	22	16

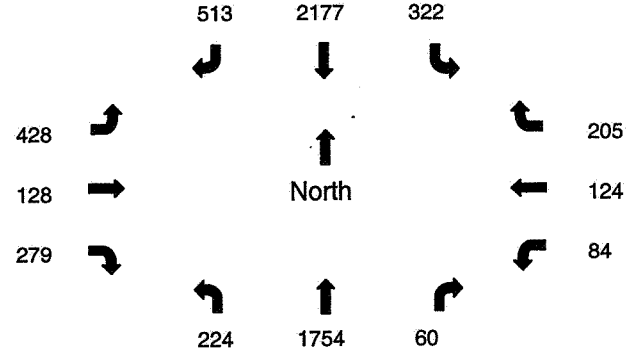
PM Peak-Hour Volume Count Worksheet

Date: 3/2/2005
Counter: Kevin Binder and Fred Sherwyn
Intersection Name: Lawrence/Oakmead/Duane
Weather: Clear

	Lawrence Expwy North Approach			Oakmead East Approach			Lawrence Expwy South Approach			Duane West Approach		
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
4:00	0	0	0	0	0	0	0	0	0	0	0	0
4:15	74	465	33	18	20	26	13	458	33	61	17	64
4:30	144	820	76	41	33	43	37	789	56	93	37	165
4:45	218	1285	136	85	55	65	49	1213	87	143	59	251
5:00	318	1811	194	131	78	86	64	1573	121	186	87	327
5:15	417	2273	304	205	107	105	78	2087	187	246	115	447
5:30	542	2820	370	257	128	133	87	2537	251	315	148	551
5:45	685	3349	431	307	148	151	98	2887	294	387	176	654
6:00	831	3988	516	336	202	170	124	3327	345	465	215	755

Peak Hour													Hourly Totals
4:00 - 5:00	318	1811	194	131	78	86	64	1573	121	186	87	327	4976
4:15 - 5:15	343	1808	271	187	87	79	65	1629	154	185	98	383	5289
4:30 - 5:30	398	2000	294	216	95	90	50	1748	195	222	111	386	5805
4:45 - 5:45	467	2064	295	222	93	86	49	1674	207	244	117	403	5921
5:00 - 6:00	513	2177	322	205	124	84	60	1754	224	279	128	428	6298
Peak Volumes:	**513**	**2177**	**322**	**205**	**124**	**84**	**60**	**1754**	**224**	**279**	**128**	**428**	**6298**



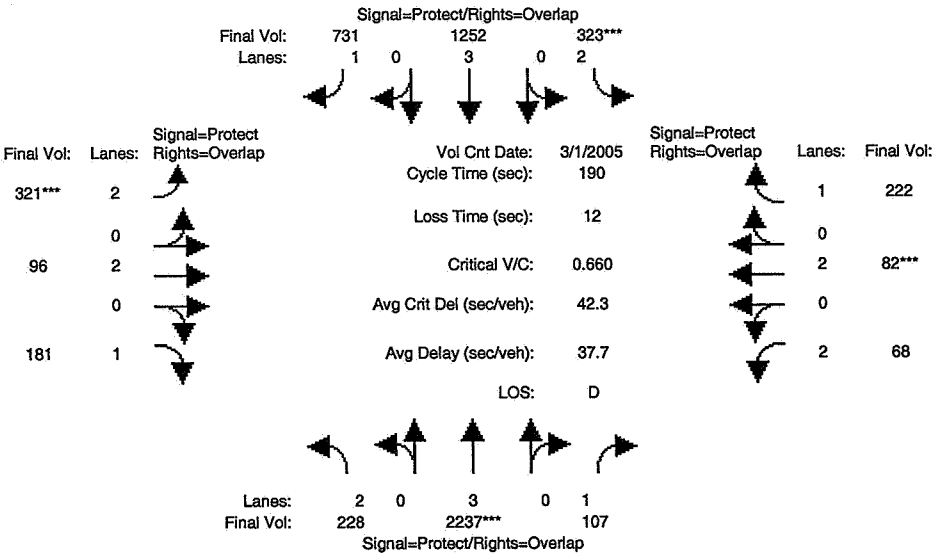


	Peds	Bikes
7:00	0	0
7:15	3	1
7:30	5	3
7:45	10	4
8:00	12	6
8:15	12	9
8:30	14	10
8:45	16	12
9:00	21	13

City of Sunnyvale
Lakeside Sheraton

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing-AM

Intersection #1: Lawrence Exp/Oakmead Pkwy

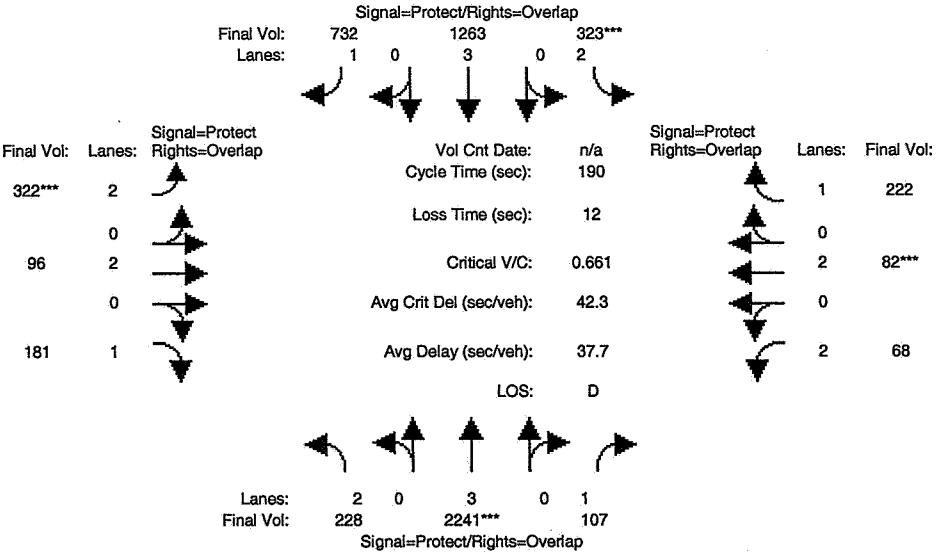


Street Name:	Lawrence Expressway						Oakmead Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Volume Module: >> Count Date: 1 Mar 2005 <<												
Base Vol:	228	2632	107	323	1473	731	321	96	181	68	82	222
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	228	2632	107	323	1473	731	321	96	181	68	82	222
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	228	2632	107	323	1473	731	321	96	181	68	82	222
User Adj:	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	228	2237	107	323	1252	731	321	96	181	68	82	222
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	228	2237	107	323	1252	731	321	96	181	68	82	222
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	228	2237	107	323	1252	731	321	96	181	68	82	222
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	5700	1750	3150	5700	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.39	0.06	0.10	0.22	0.42	0.10	0.03	0.10	0.02	0.02	0.13
Crit Moves:		****		****			****				****	
Green Time:	26.0	110	126.4	28.9	113	142.0	28.7	22.8	48.7	15.9	10.0	38.9
Volume/Cap:	0.53	0.68	0.09	0.68	0.37	0.56	0.68	0.21	0.40	0.26	0.41	0.62
Delay/Veh:	80.9	28.5	11.5	83.6	20.1	12.1	83.7	76.6	61.3	83.8	93.3	76.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	80.9	28.5	11.5	83.6	20.1	12.1	83.7	76.6	61.3	83.8	93.3	76.7
DesignQueue:	21	110	4	30	57	22	29	9	15	7	8	19

City of Sunnyvale
Lakeside Sheraton

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Bkgrd AM

Intersection #1: Lawrence Exp/Oakmead Pkwy

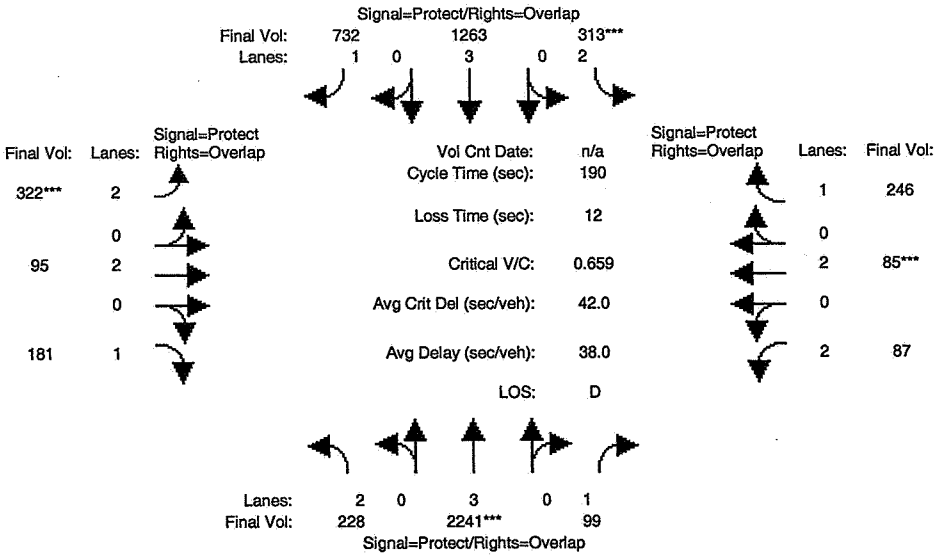


Street Name:	Lawrence Expressway						Oakmead Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Volume Module:												
Base Vol:	228	2636	107	323	1486	732	322	96	181	68	82	222
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	228	2636	107	323	1486	732	322	96	181	68	82	222
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	228	2636	107	323	1486	732	322	96	181	68	82	222
User Adj:	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	228	2241	107	323	1263	732	322	96	181	68	82	222
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	228	2241	107	323	1263	732	322	96	181	68	82	222
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	228	2241	107	323	1263	732	322	96	181	68	82	222
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	5700	1750	3150	5700	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.39	0.06	0.10	0.22	0.42	0.10	0.03	0.10	0.02	0.02	0.13
Crit Moves:		****			****			****				****
Green Time:	26.0	110	126.4	28.8	113	142.0	28.7	22.8	48.7	15.9	10.0	38.8
Volume/Cap:	0.53	0.68	0.09	0.68	0.37	0.56	0.68	0.21	0.40	0.26	0.41	0.62
Delay/Veh:	81.0	28.6	11.5	83.7	20.2	12.1	83.7	76.5	61.3	83.8	93.3	76.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	81.0	28.6	11.5	83.7	20.2	12.1	83.7	76.5	61.3	83.8	93.3	76.8
DesignQueue:	21	110	4	30	57	22	30	9	15	7	8	19

City of Sunnyvale
Lakeside Sheraton

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Proj AM

Intersection #1: Lawrence Exp/Oakmead Pkwy

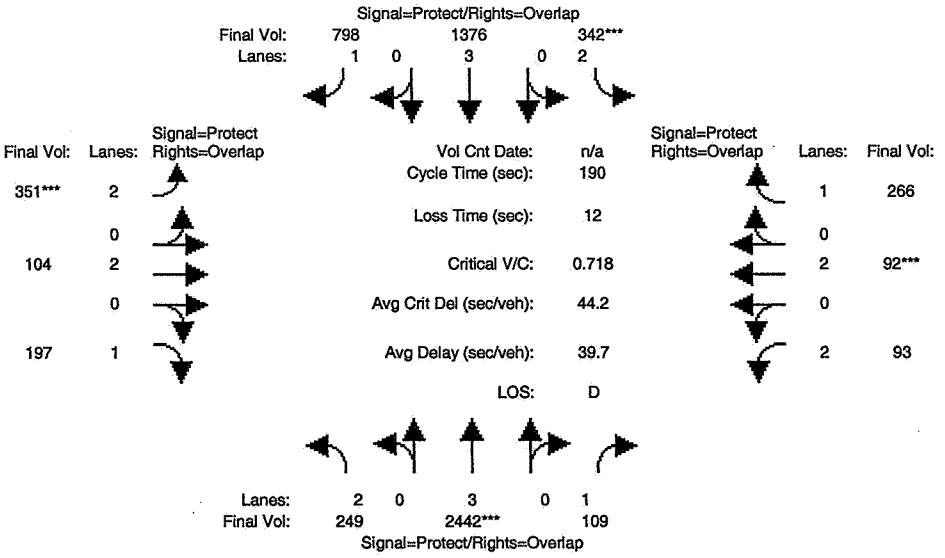


Street Name:	Lawrence Expressway						Oakmead Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Volume Module:												
Base Vol:	228	2636	99	313	1486	732	322	95	181	87	85	246
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	228	2636	99	313	1486	732	322	95	181	87	85	246
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	228	2636	99	313	1486	732	322	95	181	87	85	246
User Adj:	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	228	2241	99	313	1263	732	322	95	181	87	85	246
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	228	2241	99	313	1263	732	322	95	181	87	85	246
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	228	2241	99	313	1263	732	322	95	181	87	85	246
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	5700	1750	3150	5700	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.39	0.06	0.10	0.22	0.42	0.10	0.03	0.10	0.03	0.02	0.14
Crit Moves:		****			****			****				****
Green Time:	25.9	111	127.1	28.1	113	142.1	28.9	22.9	48.8	16.0	10.0	38.1
Volume/Cap:	0.53	0.67	0.08	0.67	0.37	0.56	0.67	0.21	0.40	0.33	0.43	0.70
Delay/Veh:	81.0	28.1	11.2	84.2	20.3	12.1	83.4	76.4	61.2	85.2	93.7	81.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	81.0	28.1	11.2	84.2	20.3	12.1	83.4	76.4	61.2	85.2	93.7	81.8
DesignQueue:	21	110	4	29	57	22	29	9	15	8	9	21

City of Sunnyvale
Lakeside Sheraton

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumu AM

Intersection #1: Lawrence Exp/Oakmead Pkwy

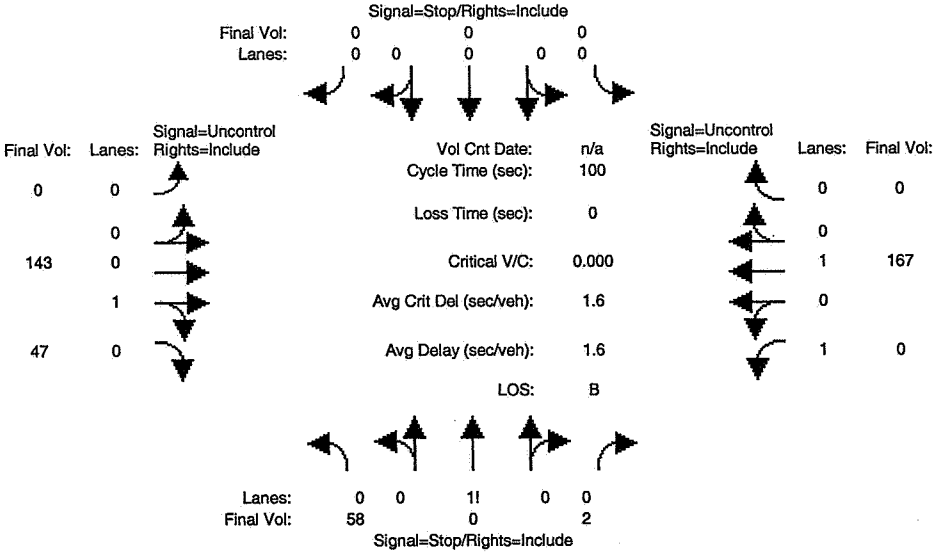


Street Name:	Lawrence Expressway						Oakmead Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Volume Module:												
Base Vol:	249	2873	109	342	1619	798	351	104	197	93	92	266
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	249	2873	109	342	1619	798	351	104	197	93	92	266
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	249	2873	109	342	1619	798	351	104	197	93	92	266
User Adj:	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	249	2442	109	342	1376	798	351	104	197	93	92	266
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	249	2442	109	342	1376	798	351	104	197	93	92	266
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	249	2442	109	342	1376	798	351	104	197	93	92	266
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	5700	1750	3150	5700	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.08	0.43	0.06	0.11	0.24	0.46	0.11	0.03	0.11	0.03	0.02	0.15
Crit Moves:		****		****			****				****	
Green Time:	26.0	111	127.0	28.1	113	142.0	28.9	22.9	48.8	16.0	10.0	38.1
Volume/Cap:	0.58	0.73	0.09	0.73	0.41	0.61	0.73	0.23	0.44	0.35	0.46	0.76
Delay/Veh:	82.5	30.2	11.3	87.2	20.8	13.3	86.5	76.7	62.2	85.7	94.8	85.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	82.5	30.2	11.3	87.2	20.8	13.3	86.5	76.7	62.2	85.7	94.8	85.7
DesignQueue:	23	121	4	32	63	24	32	10	16	9	9	23

City of Sunnyvale
Lakeside Sheraton

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Proj AM

Intersection #2: Project Driveway/Lakeside Drive



Street Name:	Project Driveway						Lakeside Drive					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	58	0	2	0	0	0	0	143	47	0	167	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	58	0	2	0	0	0	0	143	47	0	167	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	58	0	2	0	0	0	0	143	47	0	167	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	58	0	2	0	0	0	0	143	47	0	167	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	58	0	2	0	0	0	0	143	47	0	167	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	334	xxxx	167	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	666	xxxx	883	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	666	xxxx	883	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.09	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	671	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	10.9	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	*	*	*
ApproachDel:		10.9			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

Peak Hour Delay Signal Warrant Report

****

Intersection #2 Project Driveway/Lakeside Drive

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 0 0 1 0			1 0 1 0 0		
Final Vol.:	58	0	2	0	0	0	0	143	47	0	167	0
ApproachDel:	10.9			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=60]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=417]

FAIL - Total volume less than 650 for intersection with less than four approaches.

Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #2 Project Driveway/Lakeside Drive

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 0 0 1 0			1 0 1 0 0		
Final Vol.:	58	0	2	0	0	0	0	143	47	0	167	0

Major Street Volume: 357

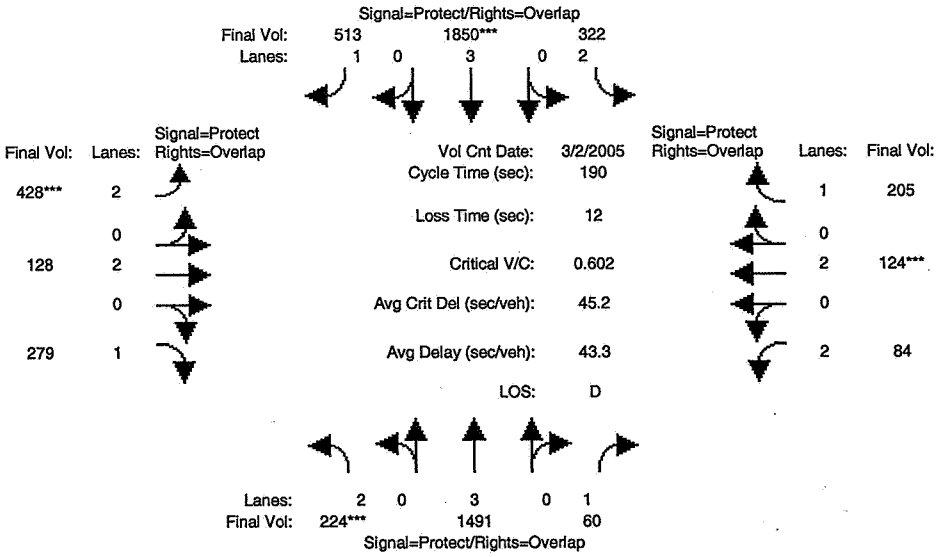
Minor Approach Volume: 60

Minor Approach Volume Threshold: 640

City of Sunnyvale
Lakeside Sheraton

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing-PM

Intersection #1: Lawrence Exp/Oakmead Pkwy

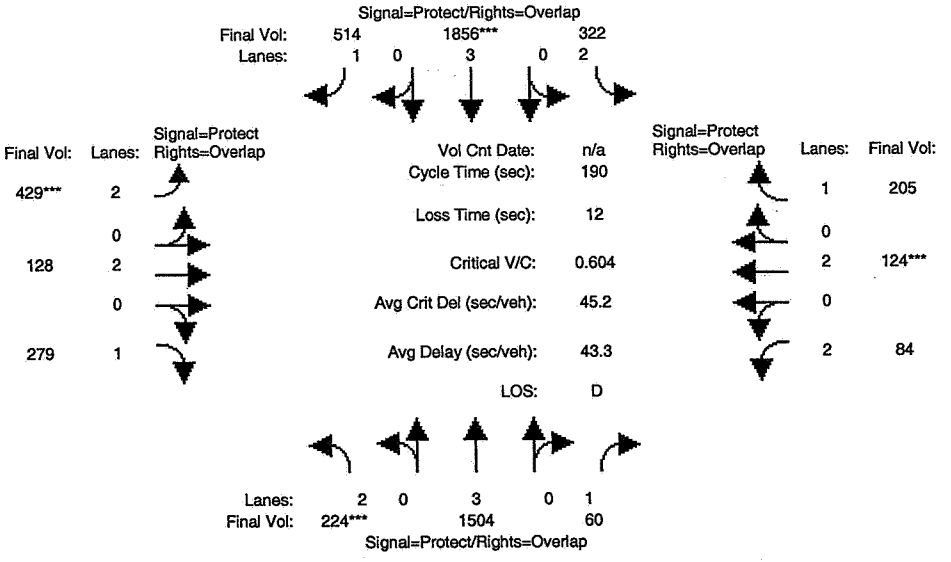


Street Name:	Lawrence Expressway						Oakmead Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Volume Module: >> Count Date: 2 Mar 2005 <<												
Base Vol:	224	1754	60	322	2177	513	428	128	279	84	124	205
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	224	1754	60	322	2177	513	428	128	279	84	124	205
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	224	1754	60	322	2177	513	428	128	279	84	124	205
User Adj:	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	224	1491	60	322	1850	513	428	128	279	84	124	205
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	224	1491	60	322	1850	513	428	128	279	84	124	205
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	224	1491	60	322	1850	513	428	128	279	84	124	205
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	5700	1750	3150	5700	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.26	0.03	0.10	0.32	0.29	0.14	0.03	0.16	0.03	0.03	0.12
Crit Moves:	****				****		****				****	
Green Time:	22.4	89.8	105.4	35.1	102	145.3	42.9	37.5	59.9	15.6	10.3	45.4
Volume/Cap:	0.60	0.55	0.06	0.55	0.60	0.38	0.60	0.17	0.51	0.32	0.60	0.49
Delay/Veh:	86.6	36.6	19.6	74.1	30.8	8.3	69.7	63.8	56.2	85.5	100	66.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	86.6	36.6	19.6	74.1	30.8	8.3	69.7	63.8	56.2	85.5	100	66.4
DesignQueue:	21	89	3	28	98	14	36	11	21	8	12	17

City of Sunnyvale
Lakeside Sheraton

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Bkgrd PM

Intersection #1: Lawrence Exp/Oakmead Pkwy

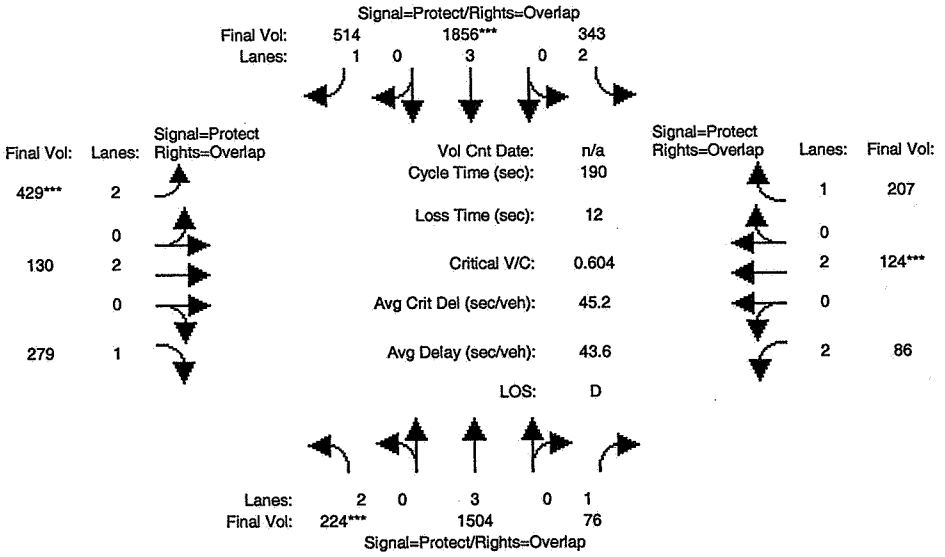


Street Name:	Lawrence Expressway						Oakmead Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Volume Module:												
Base Vol:	224	1769	60	322	2183	514	429	128	279	84	124	205
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	224	1769	60	322	2183	514	429	128	279	84	124	205
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	224	1769	60	322	2183	514	429	128	279	84	124	205
User Adj:	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	224	1504	60	322	1856	514	429	128	279	84	124	205
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	224	1504	60	322	1856	514	429	128	279	84	124	205
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	224	1504	60	322	1856	514	429	128	279	84	124	205
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	5700	1750	3150	5700	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.26	0.03	0.10	0.33	0.29	0.14	0.03	0.16	0.03	0.03	0.12
Crit Moves:	****				****		****				****	
Green Time:	22.4	90.0	105.6	34.9	102	145.3	42.9	37.5	59.9	15.6	10.3	45.1
Volume/Cap:	0.60	0.56	0.06	0.56	0.60	0.38	0.60	0.17	0.51	0.32	0.60	0.49
Delay/Veh:	86.7	36.6	19.5	74.4	30.8	8.3	69.7	63.8	56.3	85.5	100	66.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	86.7	36.6	19.5	74.4	30.8	8.3	69.7	63.8	56.3	85.5	100	66.7
DesignQueue:	21	90	3	28	99	14	36	11	21	8	12	17

City of Sunnyvale
Lakeside Sheraton

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Proj PM

Intersection #1: Lawrence Exp/Oakmead Pkwy

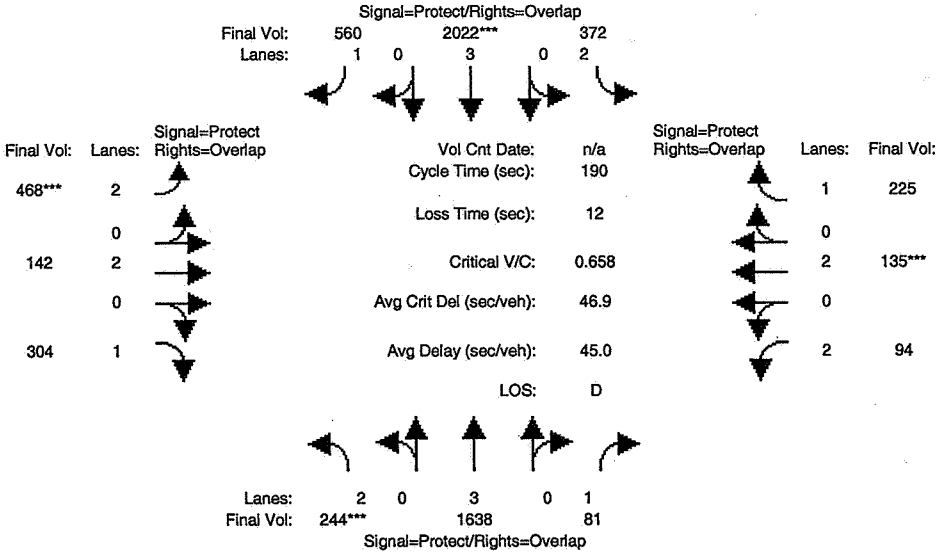


Street Name:	Lawrence Expressway						Oakmead Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Volume Module:												
Base Vol:	224	1769	76	343	2183	514	429	130	279	86	124	207
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	224	1769	76	343	2183	514	429	130	279	86	124	207
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	224	1769	76	343	2183	514	429	130	279	86	124	207
User Adj:	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	224	1504	76	343	1856	514	429	130	279	86	124	207
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	224	1504	76	343	1856	514	429	130	279	86	124	207
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	224	1504	76	343	1856	514	429	130	279	86	124	207
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	5700	1750	3150	5700	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.26	0.04	0.11	0.33	0.29	0.14	0.03	0.16	0.03	0.03	0.12
Crit Moves:	****				****		****				****	
Green Time:	22.4	88.4	104.0	36.5	102	145.3	42.9	37.5	59.9	15.6	10.3	46.8
Volume/Cap:	0.60	0.57	0.08	0.57	0.60	0.38	0.60	0.17	0.51	0.33	0.60	0.48
Delay/Veh:	86.7	37.8	20.5	73.4	30.8	8.3	69.7	63.9	56.3	85.7	100	65.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	86.7	37.8	20.5	73.4	30.8	8.3	69.7	63.9	56.3	85.7	100	65.1
DesignQueue:	21	91	4	30	99	14	36	11	21	8	12	17

City of Sunnyvale
Lakeside Sheraton

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumu PM

Intersection #1: Lawrence Exp/Oakmead Pkwy

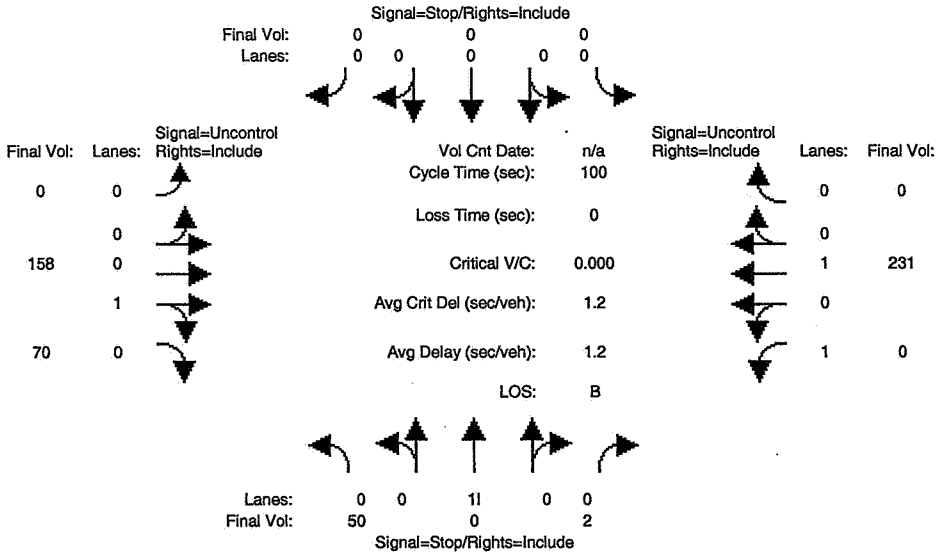


Street Name:	Lawrence Expressway						Oakmead Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Volume Module:												
Base Vol:	244	1927	81	372	2379	560	468	142	304	94	135	225
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	244	1927	81	372	2379	560	468	142	304	94	135	225
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	244	1927	81	372	2379	560	468	142	304	94	135	225
User Adj:	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	244	1638	81	372	2022	560	468	142	304	94	135	225
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	244	1638	81	372	2022	560	468	142	304	94	135	225
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	244	1638	81	372	2022	560	468	142	304	94	135	225
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	5700	1750	3150	5700	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.08	0.29	0.05	0.12	0.35	0.32	0.15	0.04	0.17	0.03	0.04	0.13
Crit Moves:	****				****		****				****	
Green Time:	22.4	88.5	103.2	36.4	102	145.4	42.9	38.5	60.8	14.7	10.3	46.6
Volume/Cap:	0.66	0.62	0.09	0.62	0.66	0.42	0.66	0.18	0.54	0.39	0.66	0.52
Delay/Veh:	89.0	39.2	21.0	75.1	32.4	8.7	71.6	63.3	56.9	87.9	103	66.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	89.0	39.2	21.0	75.1	32.4	8.7	71.6	63.3	56.9	87.9	103	66.6
DesignQueue:	23	100	4	33	109	15	40	12	23	9	14	19

City of Sunnyvale
Lakeside Sheraton

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Proj PM

Intersection #2: Project Driveway/Lakeside Drive



Street Name:	Project Driveway						Lakeside Drive					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	50	0	2	0	0	0	0	158	70	0	231	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	0	2	0	0	0	0	158	70	0	231	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	50	0	2	0	0	0	0	158	70	0	231	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	50	0	2	0	0	0	0	158	70	0	231	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	50	0	2	0	0	0	0	158	70	0	231	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	424	xxxx	193	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	591	xxxx	854	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	591	xxxx	854	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.08	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	598	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	11.6	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	*	*	*
ApproachDel:		11.6			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

Peak Hour Delay Signal Warrant Report

****

Intersection #2 Project Driveway/Lakeside Drive

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	1 0	1 0	0
Final Vol.:	50	0	2	0	0	0	0	158	70	0	231	0
ApproachDel:	11.6			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=52]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=511]

FAIL - Total volume less than 650 for intersection with less than four approaches.

Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #2 Project Driveway/Lakeside Drive

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	1 0	1 0	0
Final Vol.:	50	0	2	0	0	0	0	158	70	0	231	0

Major Street Volume: 459

Minor Approach Volume: 52

Minor Approach Volume Threshold: 553